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Today's Topics:

 2 meter lingo publication
 George Gilder's Article - Auctioning The Airwaves Part 2

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Date: 5 May 94 20:55:28 GMT
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info-server.bbn.com!news!levin@ucbvax.berkeley.edu
Subject: 2 meter lingo publication
To: ham-policy@ucsd.edu

In article <1994May5.191510.27823@cs.brown.edu> md@maxcy2.maxcy.brown.edu (Michael
P. Deignan) writes:

I'm currently working on a publication entitled "The 2-meter Lingo
Guide: A Handbook For The New Ham". I'm looking for various
[etc]

The same old song again. Clown.

Date: Thu, 5 May 1994 08:33:10 GMT
From: ihnp4.ucsd.edu!swrinde!emory!news-feed-2.peachnet.edu!umn.edu!seal!
phil@network.ucsd.edu
Subject: George Gilder's Article - Auctioning The Airwaves Part 2
To: ham-policy@ucsd.edu

In article <gaj.109.000DFCC4@portman.com> gaj@portman.com (Gordon Jacobson) writes:

>(Continued from previous message)

>

>Importing Obsolescence

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> As a result, the entire industry was convulsed by what Shute and Steinbrecher saw as a retrograde war over standards. Because Europe in general lagged far behind the United States in adopting analog cellular technology, the EEC had sponsored a multinational drive to leapfrog the United States by adopting a digital standard, which could then be exported to America. The standard they chose was called GSM (global services mobile), a time-division multiple-access (TDMA) scheme that exceeded analog capacity by breaking each channel into three digital time slots. Racing to catch up, the American industry adopted a similar TDMA approach that also increased the current system's capacity by a factor of three. With McCaw Cellular in the lead, American firms quickly committed themselves to deploy TDMA as soon as possible.

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> Then in 1991, Qualcomm unleashed a bombshell Exploiting the increasing power of DSPs to process digital codes, the company demonstrated a spread-spectrum, code-division multiple-access (CDMA) modulation scheme that not only increased capacity some twentyfold over analog but also allowed use of the entire 11.5 megahertz of the cellular bandwidth in every cell. To prevent interference between adjoining cells, analog and TDMA systems could use a frequency in only one cell out of seven.

>

> Much of the industry seemed paralyzed by fear of choosing the wrong system. To Shute and Steinbrecher, however, these fears seemed entirely reckless. Using wideband digital radios, companies could accommodate any array of frequencies and modulation schemes they desired TDMA, CDMA, voice, data and eventually even video. Shute resolved to adapt Steinbrecher's advanced radio technology to these new markets. In mid-1991, Shute rushed ahead with a program to create a prototype cellular transceiver that could process all 12.5 megahertz of the cellular bandwidth and convert it to a digital bit stream.

>

> The first major customer for the radios turned out to be ADC-Kentrox, a designer of analog cell extenders designed to overcome "dead zones" caused by large buildings in urban areas. This system was limited in reach to the few hundred meters the signals could be sent over analog wires without deterioration. By converting the signals to digital at the remote site, the Steinbrecher radio extended this distance from hundreds of meters to scores of kilometers and allowed the price of the product to remain at \$ 100,000.

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> But these gains concealed the potential impact and meaning of the Steinbrecher technology. Once again, the Steinbrecher radios are being used

>to complement the existing system rather than overthrow it. In a similar
>way, McCaw plans to buy some \$ 30 million worth of Steinbrecher machines to
>carry through its cellular digital packet data (CDPD) network. To be
>provided to 95 percent of McCaw's regions by the end of 1995, CDPD is a data
>overlay of the existing cellular system, which allows users of the current
>analog system to send digital data at a rate of 19.2 kilobits per second,
>compared to the 9.6-kilobit-per-second rate offered by most modems over
>twisted-pair wires.

>

> The Steinbrecher radio can survey any existing swath of spectrum in real
>time and determine almost instantly which channels are in use and which are
>free. It is this capability that convinced McCaw to buy Steinbrecher data
>cells despite the commitment of McCaw's putative owner, AT&T, to sell
>narrowband units made by Cirrus Logics' subsidiary Pacific Communications
>Sciences Inc. (PCSI), which have to scan through channels one at a time.
>McCaw is using the Steinbrecher radios as sniffers that constantly survey
>the cellular band and direct data bursts to those channels that are not being
>used at a particular time.

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> Indeed, the immediate needs of the marketplace alone justify the
>adoption of Steinbrecher data cells. With modems and antennas increasingly
>available and even moving sometime next year to PCMCIA slots the size of a
>credit card, demand for wireless data is likely to soar.

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> PCSI is now shipping a quintuple-threat communicator that fits into the
>floppy bay of an advanced IBM ThinkPad notebook or an Apple PowerBook,
>enabling them to send and receive faxes, make wireless or wire-line phone
>calls, dispatch data files across the existing cellular network or send CDPD
>packets at 19.2 kilobits per second. Speech recognition capabilities from
>IBM and Dragon Systems will come next year to personal digital assistants,
>permitting them to read or receive E-mail by voice. Although the first
>Newtons and Zoomers have disappointed their sponsors, the market will
>ignite over the next two years as vendors adopt the essential form factor of
>a digital cellular phone with computer functions rather than providing a
>kluge computer with a vaporware phone.

>

> Nonetheless, McCaw has more on its mind with Steinbrecher than merely
>gaining a second source for CDPD sniffers. By simultaneously purchasing
>some 10 percent of the company and putting chief technical officer Nicholas
>Kauser on the Steinbrecher board, McCaw is signaling not a tactical move but
>a major strategic thrust. The Steinbrecher rollout in fact represents
>McCaw's stealth deployment of broadband digital capability.

>

> Today the rival CDPD equipment from PCSI, Hughes and AT&T all can be
>made to perform CDPD communications as an overlay to the existing cellular
>phone system. However, only the Steinbrecher systems can be upgraded to
>perform all of the functions of a base station and more, for voice, data and
>video. Only Steinbrecher allows the replacement of 416 radio transceivers,

>one for each channel, with one broadband radio and some digital signal
>processing chips. Only Steinbrecher can replace a \$ 1.5 million,
>1,000 square foot cellular base station with a box the size of a briefcase
>costing some \$ 100,000 but, thanks to Moore's Law, racing toward \$ 10,000.

>
> It remains to be seen only whether McCaw will have the guts to follow
>through on this initiative by completely rebuilding its network to
>accommodate the wideband radio being installed at its heart.
>Self-cannibalization is the rule of success in information technology. Intel
>and Microsoft, for example, lead the way in constantly attacking their own
>products. But this mode of life is deeply alien to the telephone
>business--even an entrepreneurial outfit like McCaw.

>
> With new software and a simple upgrade to a MiniCell, the Steinbrecher
>DataCell will allow the McCaw system to handle all modulation schemes
>simultaneously--AMPS, TDMA, CDMA and future methods such as Orthogonal
>Frequency Division Multiple Access--obviating the need for hybrid phones.
>The multiprotocol and aerobatic capabilities of broadband digital radios
>could enable McCaw to roll out a cornucopia of PCS services--for everything
>from monitoring vending machines or remote power stations to tracking tracks
>and packages, and linking laptops and PDAs--while the rest of the industry is
>still paralyzed by wrangles over incumbent users, regulatory procedures,
>frequency access and radio standards.

>
> Making channel sizes a variable rather than a fixed function of radios,
>Steinbrecher systems offer the possibility of bandwidth on demand. They
>could open up the entire spectrum as one gigantic broadband pipe into which
>we would be able to insert packets in any empty space--dark fiber in the air.

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>So Stop The Auction

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> So what does this have to do with the impending spectrum auction?
>Almost everything. Strictly speaking, the FCC is leasing 10 year exclusive
>rights to radiate electromagnetic waves at certain frequencies to deliver
>PCS. This entire auction concept is tied to thousands of exclusive frequency
>licenses. It has no place for broadband radios that treat all frequencies
>alike and offer bandwidth on demand. It has no place for modulation schemes
>that do not need exclusive spectrum space. Continuing to use interference
>standards based on analog transmissions that are affected by every passing
>spray of radiation, FCC rules fail to grasp the far more robust nature of
>digital on-off codes with error correction. By the time the FCC gets around
>to selling its 1,500 shards of air, the air will have been radically changed
>by new technology.

>

> The FCC is fostering a real estate paradigm for the spectrum. You buy
>or lease spectrum as you would a spread of land. Once you have your license,

>you can use it any way you want as long as you don't unduly disturb the
>neighbors. You rent a stretch of beach and build a wall.

>

> The Steinbrecher system, by contrast, suggests a model not of a beach
>but of an ocean. You can no more lease electromagnetic waves than you can
>lease ocean waves. Enabled by new technology, this new model is suitable for
>an information superhighway in the sky. You can use the spectrum as much
>as you want as long as you don't collide with anyone else or pollute it with
>high-powered noise or other nuisances.

>

> In the Steinbrecher model, you employ the spectrum as you use any
>public right of way. You are responsible for keeping your eyes open and
>avoiding others. You cannot just buy a 10 year lease and then barge blindly
>all over the air in a high-powered vessel, depending on the government to
>keep everyone else off your territory and out of your way. The spectrum is
>no longer dark. The Steinbrecher broadband radio supplies you with lights
>as you travel the information superhighway. You can see other travelers and
>avoid them.

>

> Even if Steinbrecher radios did not exist, however, the assumptions of
>the auction are collapsing in the face of innovations by Qualcomm and other
>spread-spectrum companies. Like Steinbrecher radios, CDMA modulation
>schemes allow you to use spectrum without interfering with others. To
>auditors without the code, calls seem indistinguishable from noise. But
>radios with the code can dig up signals from under the noise floor. Up to
>the point of traffic congestion where the quality of the signal begins to
>degrade gracefully, numerous users can employ the same frequencies at the
>same time.

>

> This property of CDMA has been tested in Qualcomm's CDMA Omnitrac
>position locator and two-way communications system. Mainly used by
>trucking companies, it is now being extended to cars, boats, trains and other
>mobile equipment. Based on geosynchronous satellites, it operates all across
>the country, with some 60,000 units, under a secondary license that forbids
>Qualcomm to interfere with the primary license-holders of the same
>frequencies. Qualcomm's transceivers on the tops of trucks use a small
>antenna that issues a beam six to 10 degrees in width. Because satellites
>are just two degrees apart, the Qualcomm beam can blanket several satellites.
>Other users, however, are entirely unconscious of the presence of the CDMA
>signal. Omnitrac has operated for some six years and has not interfered
>with anyone yet.

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>No More Blind Drivers On The Information Superhighway

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> With an increasing array of low-interference technologies available, the
>FCC should not give exclusive rights to anyone. Instead, it should impose a

>heavy burden of proof on any service providers with blind or high-powered
>systems that maintain that they cannot operate without an exclusive license,
>that want to build on the beach and keep everyone else out of the surf. In
>particular, the FCC should make all the proponents of TDMA, whether in the
>American or European GSM systems, explain why the government should wall
>off spectrum. The wireless systems of the future will offer bandwidth on
>demand and send their packets wherever there is room.

>

> At the same time that new technologies make hash of the need to auction
>off exclusive licenses, Qualcomm and Steinbrecher also radically attack the
>very notion of spectrum scarcity on which the auction is based.
>Steinbrecher's radio makes it possible to manufacture new spectrum nearly at
>will. By putting one of his MiniCells on every telephone pole and down every
>alley and in every elevator shaft, the cellular industry can exponentially
>multiply the total number of calls it can handle. At some \$ 100,000 apiece
>and dropping in price, these MiniCells can operate at 900 megahertz or six
>gigahertz just as well as at the two-gigahertz range being auctioned by the
>government. It is as if Reed Hundt is auctioning off beachfront property,
>with a long list of codicils and regulations and restrictive covenants, while
>the tide pours in around him and creates new surf everywhere.

>

> Still more important in view of the coming auction, the wideband
>capability of the Steinbrecher radio joins CDMA in allowing the use of huge
>spans of spectrum that are ostensibly occupied by other users. The
>Steinbrecher radio can survey the gigahertz reserves of the military and
>intelligence services, UHF television and microwave, and direct usage to the
>many fallow regions. For example, the prime territory between 225 megahertz
>and 400 megahertz, consisting of some 3,0130 25-kilohertz channels, is
>entirely occupied by government and air force communications. But most of
>the channels are largely unused. A Steinbrecher radio could sit on those
>frequencies and direct calls to empty slots.

>

> An ideal system would combine Steinbrecher broadband machines with
>Qualcomm's modulation schemes. Steinbrecher supplies the lights and eyes to
>find space in already licensed spectrum bands; CDMA allows the noninvasive
>entry into spans of spectrum that are in active use.

>

> Meanwhile, the Steinbrecher system changes the very nature of spectrum
>"ownership" or rental. Unrestricted to a single band or range of
>frequencies, Steinbrecher radios can reach from the kilohertz to the high
>gigahertz and go to any unoccupied territory. As Steinbrecher radios become
>the dominant technology, the notion of spectrum assignments allotted in 2,500
>specific shards becomes a technological absurdity.

>

> Wall Street is beginning to catch on. When Steinbrecher announced in
>January a private placement through Alex. Brown, the company wanted to
>raise some \$ 20 million. The response was overwhelming, and hundreds of
>frustrated investors were left wringing their hands as the new radio left the

>station. The sole proprietorship of the mid-1980s with revenues of \$ 5
>million or less was moving into sleek new headquarters off Route 198 in
>Burlington. Steinbrecher Corp. was becoming yet another of the Moore's Law
>monsters.

>
> Meanwhile, the issue for Washington emerges starkly. Do we want a
>strategy for MiniCells or for Minitels?

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news.kei.com!world!drt@ucbvax.berkeley.edu
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References <Cotp3M.CvL@world.std.com>, <phb.767540105@melpar>,
<VBREAUULT.94May5152253@rinhp750.gmr.com>
Subject : Re: [News] FCC Gets New Weapon

Well, there are some requirements to inform people of licensing.

GMRS transmitters, for example, are supposed to be accompanied by a
copy of the applicable rules and an application for a license.

I believe VHF marine rigs are also supposed to have an application in
them (and since there's provision for temporary operation until the real
license comes, it's hard to see how this is much of a deterrent.)

CBs don't need licenses, of course, but inclusion of a copy of the rules
is mandatory.

Some amateur manuals carry a warning about this, and some don't. Like
the manual for my Kenwood HT, which warn against illegal operation
resulting from mods, but not from bootlegging.

Commercial radios are odd: there is a one-paragraph provision of Part 90 making it illegal for anyone to program a frequency into a radio unless the user is licensed for that frequency, but I have no idea if over-the-counter HTs with crystals included have any warning in their manuals or papers. Licensing is the sort of thing businesses often pay their dealers to take care of, and those professional dealers would seem to have some responsibility to their customers. I've heard talk that the FCC might once again require a commercial licence for servicing these radios.

In short, there seems plenty of precedent for requiring notice of possible licensing requirements in the documentation.

Oh, and a short editorial note. Throwing the book at people *because* they have a license and should have known better, but not at ordinary blokes, strikes me as excusing ignorance of the law, which is not ordinarily done. A note in a manual and an included application don't seem like onerous requirements after the trouble and expense of type-acceptance, and might do even more to insure compliance with the law.

-drt

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End of Ham-Policy Digest V94 #194
